The San Juan Basin Plan

By GEORGE MOORE, M.D., M.P.H.

IN THE EVENT of a national emergency from enemy attack, the small cities, towns, and villages of America will save the populations of many of the larger industrial cities. This statement cannot be questioned since the primary targets in the United States include most large cities with their factories and congested populations. How can the small cities and towns in rural areas save their urban neighbors? The San Juan Basin of Colorado has attempted to provide an answer.

Some 33,000 people live in the San Juan Basin, a four-corner, 12,000-square-mile area flanked by the high mountain ranges of the Rockies. The basin is central to Albuquerque in New Mexico, to Phoenix in Arizona, to Salt Lake City in Utah, and to Denver and Pueblo in Colorado. Distances to these cities range from 200 to 500 miles. Most east-west and north-south highways in this region of the southwest converge on Durango and Cortez, Colo., the basin's largest communities. Durango has a population of 12,000, Cortez, 5,000.

In the event of enemy attack, no target in the basin would be worthy of enemy bombs, but dangers do exist. Radioactive fallout from the bombed cities may drift over the basin. Enemy saboteurs may plot destruction of vital installations. Thousands of evacuees may seek refuge in our homes and hospitals.

The danger of radioactive fallout has been met by establishing in Durango, at a cost of about $1,000, a detection station that houses a Staplex single-volume air sampler. Manned by a team of health department personnel, the instrument is capable of detecting minute amounts of radioactivity in the air before the danger becomes serious, thus providing hours of warning. It operates on 110-volt current or by a generator.

A weather bureau official computes the fallout patterns and relays his findings to our radio

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Dr. Moore, director of the San Juan Basin Health Unit, Durango, Colo., is one of three physicians appointed by the San Juan Basin Medical Society to plan for medical care in an areawide emergency. An account of Dr. Moore's experience as chief public health officer, United States Operations Mission to Nepal, 1952 to 1954, appeared in the April 1954 issue of Public Health Reports, p. 340.

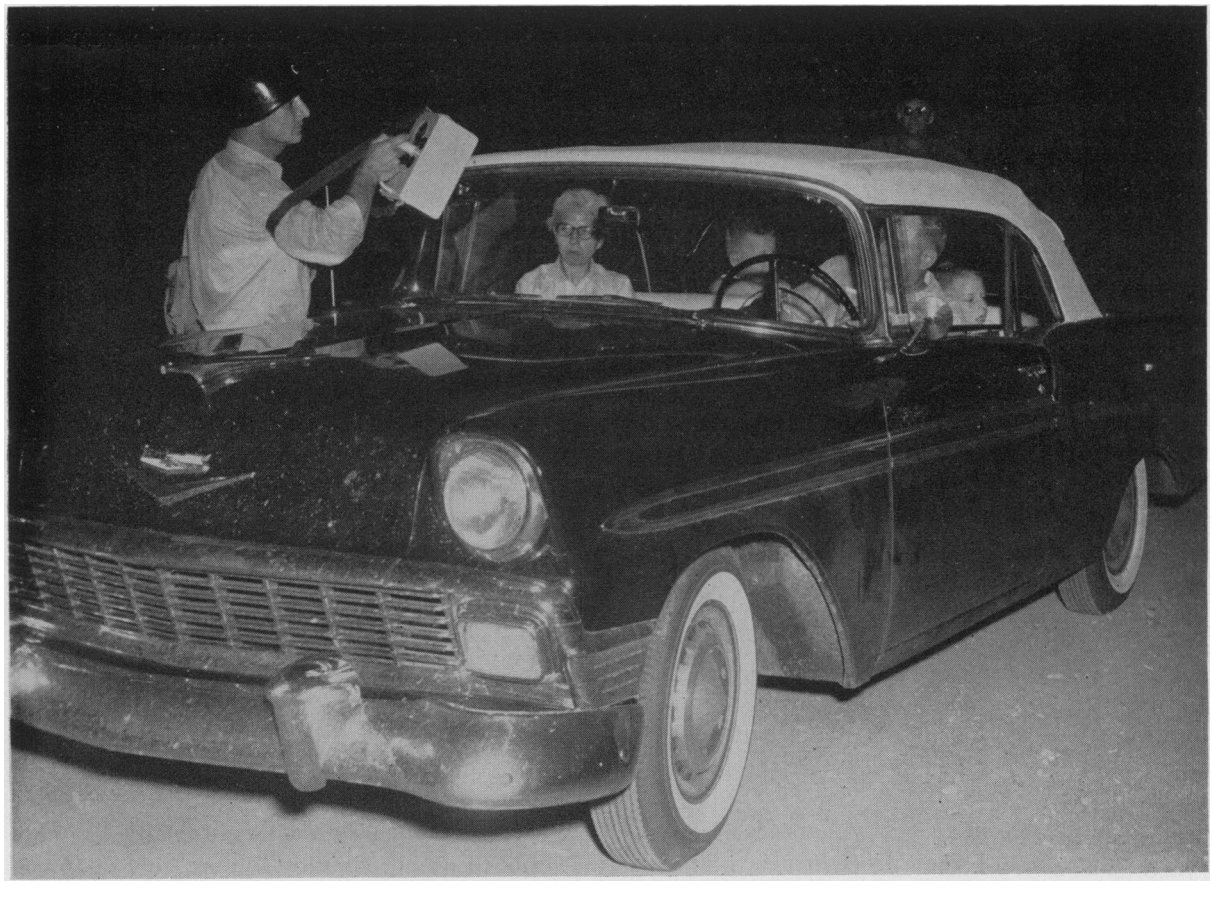
station for Conelrad broadcasts on 640 and 1240 AM frequencies. If, after an attack, the team should find that fallout is a serious hazard, civil defense officials could confidently call for withdrawal toward a safer area. Mass evacuation of the basin's families can thus be a leisurely and simple procedure.

As to the second danger, we can expect that one-way bombers after their bombing runs from the north might land on the flat mesas and prairies of central and southwest States. We can also reasonably expect that airmen conversant with American customs and perhaps trained in sabotage will enter cities and towns unnoticed and mingle with the populace. Their job would be to foment panic, to set fires in forests and lumberyards, to destroy bridges, powerplants, and oil dumps, and to contaminate water and food supplies with chemical and bacteriological agents.

A third problem, fraught with danger too, is the extent of our preparedness to receive and care for evacuees. If a city such as Albuquerque with a population of 160,000 has at least 3 hours' warning, it is expected that about 150,000 persons could be evacuated. Possibly 20,000 or more refugees will find their way northward across the desert to the mountainous San Juan Basin.

Many of these evacuees, hungry, desperate, sick, and afraid, might conceivably ransack and loot stores, gasoline pumps, and food warehouses, leaving nothing for evacuees or residents alike. And without further food and

for Small City Survival



stores for 3 weeks or more, the basin's inhabitants would themselves become victims of war. Therefore, an orderly reception of evacuees is necessary to insure help and rapid recovery for all.

The Fortress City

The survival plan is for Durango to consider itself a fortress in time of attack. At the flash of national alert, the city will go under civil defense authority, similar to martial law in many respects. All emergency teams will proceed to their stations.

Main highways leading into Durango will be barricaded with bulldozers and trucks, leaving detour routes around the city open for outside traffic as needed. All traffic within the city, except emergency and official vehicles, will be stopped. Places of business and service stations will be closed. Armed guards will be posted in front of food stores to prevent runs on supplies. School children will be sent home immediately. People will be warned to stay in their homes.

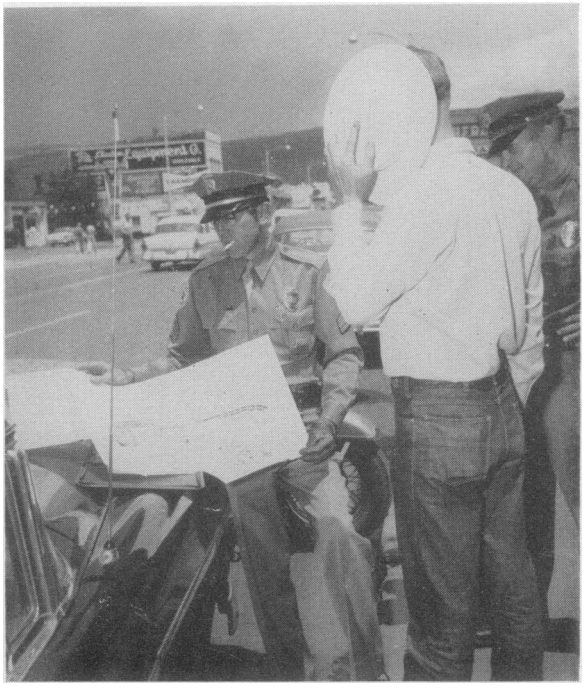
Thus, the city will be ready for attack, teams will be at their posts, and residents and workers will be at home waiting for Conelrad reports on their radios. In this period of waiting the public will ready their cars, fill tanks with stored supplies of gasoline, draw off water for storage, and prepare baskets of food. Conelrad in cooperation with the detection station will advise of fallout from bombed areas. If mass evacuation of the city is necessary, Conelrad will describe the routes to designated rendezvous points.

Reception of Evacuees

When the first evacuees arrive at Durango, they will be met at the roadblocks by the traffic control teams. If they prefer to detour the city, they will be offered a cup of coffee and a sandwich by a welfare team and then directed to follow the markers. Gas stations at each barricade will ration a few gallons of fuel, if needed, to each vehicle as long as the gasoline lasts.

For the 20,000 evacuees who prefer to stay in Durango, a different procedure is planned. These individuals will be met at the barricades by monitoring teams who, with geiger counters and ionization chambers, will check for radioactive fallout dust. Vehicles found to be radioactive will be either left outside the barricade or motioned on toward the detour, as the occupants prefer. Vehicles found free from contamination are then screened by the police for saboteurs. Luggage and identification will be checked thoroughly before either a vehicle or person is permitted to pass the barrier. Arrangements have been made for the care of pets.

Each barricade will have a mobile first aid team led by a physician. The team will send injured and ill evacuees, by ambulance or truck, to one of three first aid centers temporarily established in the Durango public schools. The injured and sick will be treated at the first aid stations and then either transferred to a hospital or released to one of five registration centers. The healthy evacuees will be directed to a wide parking expanse where traffic teams will park the cars in an orderly fashion. Radios at the barricade will keep the teams informed of possible new dangers.



"Saboteur" found on public street by Durango police during simulated alert, July 1956.

At the parking lot, the evacuees, carrying their luggage, will board school buses waiting to shuttle them to the registration centers. The centers are to be located in public buildings central to each of five main sections in the city. They will be manned by volunteers and welfare officials. After registration, evacuees will be sent on foot, in company with boy scouts or uniformed guides, to their assigned quarters in the homes of residents. A list of available rooms is ready in anticipation of this maneuver.

In the interim, the fire department will have been waiting for emergency calls, and the police department will have stationed guards at bridges, gas depots, water works, and other vulnerable sites. Factories will have assigned men to guard industrial targets. The relative absence of street traffic will simplify the job of safeguarding people, homes, and key targets. Likewise, the detection of looters and saboteurs will be less difficult.

The next morning should see Durango intact with all evacuees received and placed. The care and conservation of what is left then begins.

Realistic Planning

A full count of evacuees and an inventory of food, clothing, gasoline, and medical supplies will determine how the city will live for the next few weeks. Health officials will check water and food for possible contamination and will try to maintain near normal services. Twice a day, volunteers and welfare and health personnel will set up food lines at the fairgrounds and at large restaurants.

For supplementary needs the granges have accumulated stores of extra supplies of canned food, fruit, potatoes, and gasoline. These will be rationed as needed. At any time, we could supply 25,000 to 30,000 pounds of milk, 25,000 head of beef cattle, 60,000 sheep, and 1,000 hogs. Flour, pinto beans, and grain are abundant. Food, therefore, should not be a problem.

If the watershed becomes contaminated with fallout, we would have enough stored water, once the reservoir is covered as planned for 1957, to last evacuees and residents 3 weeks. Water supplies have been tremendously improved this year over last by the addition of a new filter plant in Durango. Water during most of the year is plentiful. Most farms have wells, and water will be transported to the cities as needed. Our fast-flowing streams could in warm weather decontaminate most of the watershed within a week. Sewerage, though inadequate, also has top priority in city budgeting.

Sheriff and civil defense aide find "bomb" under oil tank in Durango suburban area.

The police and firemen in Durango have been trained by former Army servicemen in many types of counter sabotage. The police and fire departments held an impressive operation alert in July 1956 together with civil defense teams, health department personnel, and amateur radio operators. The exercise simulated a realistic emergency complete with enemy agents plotting to contaminate water, incendiary fires ignited in army-type smoke pots, and time bombs planted at strategic sites (see pictures).

During an alert, auxiliary police will patrol the filter plant and reservoir, and our sanitation staff will stand by for any emergency. Continuous check will be made on the water for turbidity, changes in pH, presence of bacteriological agents, and deposits of radioactive fallout if it is a problem. The small laboratory of our health department and the technician in charge are well equipped and well qualified to make bacteriological examinations. We hope to acquire a millipore filter soon.

All of the health department staff have received special training in civil defense through courses in Denver and in Washington. They in turn have helped to train civil defense work-

ers in Durango (see program). The monitoring teams have been trained in food and water decontamination. The fluorescent antibody and phage tests for rapid bacteriological diagnosis as well as complete kits for CW (chemical warfare) sampling will be added to our program as soon as these materials are released. At present, public health defense against BW and CW attacks is not particularly effective until the specific agent is determined and after people are already sick and dying.

The San Juan Basin Health Unit now has a full year's determination of background counts on radioactive fallout. The Colorado State Health Department gave valuable assistance in calibrating the air sampler and in training health personnel in radiation detection. The weather bureau official who will chart and relay fallout reports was sent to the Sandia Corporation in New Mexico for special training.

Natural and Wartime Disasters

The survival plan will utilize every available inch of space in the hospitals as well as in auxiliary buildings. The only hospitals in the basin are the two hospitals in Durango and the hospital in Cortez. Altogether we count on having 300 hospital beds, 25 physicians, 6 dentists, 4 veterinarians, 185 first aid workers, and about 150 nurses and aides. All available nurses have been listed. If disaster strikes a nearby city, a team of 6 physicians with nurses and helpers and supplies is ready for call.

A move has been made to bring Federal Civil Defense Administration stockpiling to the basin because of the remoteness of the stockpiles in Texas and Utah and at Greeley, Colo. All hospitals are stockpiling medical supplies and rotating perishable items. Eventually, their stockpiles will hold a year's supply in advance.

Vaccines and serums are not being stockpiled to any great extent because it is not in our present plan to offer immunizations to the public at large. The health unit has been attempting to provide mass immunization through school programs. Immunization levels among school children are well over 85 percent for smallpox and diphtheria-pertussis-tetanus.

Civil Defense Training Course

San Juan Basin Health Unit

First Day

Strategic briefing of civil defense.

Effects of modern weapons. Films "Let's Face It" and "Operation Ivy."

Nuclear weapons and radiation detection instruments. Film "A Is For Atom."

Evaluation of radioactive fallout hazard.

Biomedical effects of radiation.

Chemical warfare.

Bacteriological warfare.

Films "Flash of Darkness" and "Target You."

Evening

Films "Atomic Attack" and "Frontline of Freedom."

Second Day

Civil defense analysis.

Attack warning. Film "Conelrad."

Civil defense organization.

Organization of health services, casualty care, health and medical supply program, and the improvised hospital.

Durango as a typical support area, urban analysis.

Evacuation, shelters, and cover. Films "Escape Route" and "Operation Welcome."

Rescue training. Film "Trapped."

Registration and warden services.

Police and traffic services.

In addition, the Indians in the basin are now protected with typhoid-paratyphoid vaccine.

We have tried to be realistic in planning for various types of casualties. In addition to screening evacuees for communicable disease, we have made specific provisions for isolation of disease suspects at first aid stations, for the use of churches and churchmen to help alleviate hysteria and panic, and for hospitals to set aside wards for radiation victims. Evacuees with burns, fractures, amputations, and other serious conditions are not expected in great numbers because of the basin's distance from target areas. They may be sent here later, however.

Of course, no one knows how many evacuees the basin might receive, but, for our planning, a total of 20,000 has seemed a practical number to assume. Durango, with new discoveries of oil, gas, and uranium, has become a boom town since the war. Housing is at a premium, and most new homes are ranch style and small. We would have trouble accepting more than 20,000 new people, but if we had no choice, we would use barns, rodeo facilities, and all available public buildings.

Considerable interest has been expressed in our plan. A mutual aid pact is being drawn up with Farmington, N. Mex., the first large city south on the road to Albuquerque. Farmington will detour evacuees to us as we will to them if cities to the north of Durango are bombed. Other cities in Colorado and New Mexico and even in South Dakota have shown interest in organizing similar programs. It has been obvious that the public is worried about the future and will work enthusiastically if we lead the way and provide hope.

The basin also has an alternative emergency plan that covers the natural disasters any community might experience from train wrecks, fires, collapsed buildings, and flood. Not more than 50 casualties are expected from any one isolated incident. These we will care for by using the maximum available beds in the basin's hospitals. The hospitals are prepared, as needed, to reroute their patients and to provide morgues and extra dispensary space. Physicians have specific assignments.

Now that all phases of both plans are complete, we trust that the basin will be ready for whatever comes, natural and war disasters alike.

NOTE: The photographs were supplied through the courtesy of Pennington Studio, Durango, and the *Durango Herald News.*

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The Personal Touch

Though approximately 400 persons receive postgraduate training in public health every year, the profession is probably losing between 600 and 700. States fortunate enough to have a reasonable number of public health workers have usually obtained the greater proportion from adjoining areas.

Our replacement needs and the additional workers needed to meet the demands of a growing population have to be viewed realistically in the light of the decreased supply of young people, brought on by the reduced birth rate from 1930 to 1941, and of the many inducements that are currently offered to them.

Industry's profits at the moment are of such magnitude in relation to the tax structure that industries can afford to pay salaries to professional personnel for beginning employment in ranges that industries themselves recognize are greater than the employee is actually worth.

Training for public health work, usually provided from public funds because it primarily benefits the employer, has declined appreciably because of cuts in Federal grant funds. Some States have been reluctant to finance training or have been unable by law to do so. Thus, the cost of preparation is devolving upon the individuals themselves even though financial compensation, when employed, does not compare favorably with that of industry.

Since competition for personnel is so keen, I would like to suggest that there is a common need for bringing to seventh, eighth, and ninth graders some concept of the many interesting things that can be done in public health work. I would encourage maximum sensitization of this group through whatever channels you can use to reach them. Perhaps too few of us have thought about the influence we could have by working actively in such groups as the Boy Scouts and Girl Scouts and the Hi–Y and 4–H clubs.

The most effective recruitment program I have seen for getting young ladies into a nursing school was one in which each student was given the responsibility for seeking out some worthy successor from her former high school and giving her a pledge pin.

Our recruitment programs must be personalized if they are to be effective.

—HARALD M. GRANING, M.D., *regional medical director with the Public Health Service, Region 5, Chicago, in a speech at the annual meeting of the Middle States Public Health Association, Columbus, Ohio, April 30, 1956.*

technical publications

Diabetes Program Guide

PHS Publication No. 506. 72 pages. 45 cents.

State and local workers in diabetes control activities will find in this compact guide a complete presentation of the principles and procedures of community diabetes programs, starting with community resources and proceeding through prevention to case finding, education, evaluation, and research.

Emphasis is placed on testing, with statistical and laboratory procedures treated in some detail.

Criteria of success in diabetes programs are stated as: finding unrecognized diabetics and following them to diagnosis and treatment; helping prevent or correct obesity; helping diabetics control their condition under medical supervision; promoting the understanding of diabetes through individual and group education; and mobilizing community resources.

Included are forms and form letters, seven pages of references, and a detailed section on the cost of screening, with data on both laboratory costs and personnel.

Your Child from One to Six

Children's Bureau Publication No. 30. Revised 1956. 110 pages; illustrated. 20 cents.

This revised bulletin for parents emphasizes the mental and emotional development of children from infancy to school age.

The problem of television viewing is discussed for the first time. Other new sections point out how a child can learn to do without its mother, how to prepare a child for hospitalization, and what to tell a child who asks about death.

A comprehensive medical section tells how to handle emergencies, how to care for a sick child, and how to prevent and recognize illness. Also provided is a complete immunization plan for children from one month of age throughout childhood.

Public Health

Merit Badge Series No. 3251. 1956. Boy Scouts of America. 66 pages; illustrated. 25 cents.

A new version of this pamphlet has been prepared in association with the Public Health Service. Designed to help Boy Scouts qualify for a merit badge, it is also an elementary introduction to basic concepts and programs of the public health profession.

Sources of Morbidity Data, Listing Number 4, 1956

PHS Publication No. 504. 1956. 74 pages.

The fourth listing of projects in the files of the Clearinghouse on Current Morbidity Statistics Projects contains descriptions of 102 projects, supplementing the 477 described in listings Nos. 1, 2, and 3 (PHS Publications Nos. 332, 399, and 459).

There are three indexes: the projects by type of data collection; the organizations and institutions participating in the projects, by State; and the principal investigators. Also included is a section of supplementary notes representing a systematic followup on projects in the previous listings that were in progress when their descriptions were received by the clearinghouse.

Because the listings of the clearinghouse are published primarily for the use of actual and potential contributors, the number of bound copies available for other distribution is limited. Tear sheets for all projects are on file, however, and these will be mailed free of charge to persons inquiring about studies of a particular type.

Federal Support for Science Students in Higher Education, 1954

National Science Foundation Publication No. 56–18. 33 pages. 30 cents.

Designed to assist in evaluating proposals for federally financed scholarships in the sciences, this report provides information on present Federal aid to college and university science students.

It shows how much of the expenditure (in the form of fellowships or otherwise) in each program went to students in the various scientific disciplines; how many career science students were assisted; which Federal agencies were involved; how the various forms of financial aid were distributed among those studying in scientific fields; and, how, among the fields of study at graduate level, the federally aided group of science students compares with the nationwide graduate student body in the sciences.

Data on students in nonscience fields are included in the aggregate only for comparison.

This section carries announcements of all new Public Health Service publications and of selected new publications on health topics prepared by other Federal Government agencies.

Publications for which prices are quoted are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Orders should be accompanied by cash, check, or money order and should fully identify the publication. Public Health Service publications which do not carry price quotations, as well as single sample copies of those for which prices are shown, can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington 25, D. C.

The Public Health Service does not supply publications issued by other agencies.